

Good news from the South: Biodiversity mainstreaming – A paradigm shift in conservation?

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'Bad governance stifles everything' said ecologist Richard Cowling, a pioneer in promoting mainstreaming approaches to conserving biodiversity. Cowling was addressing an international workshop convened in Cape Town in October 2013 to review progress in the impressive body of 327 projects in 135 countries supported since the late 1990s by the Global Environment Facility (GEF).¹ With over USD1.6 billion invested by the GEF, and USD5.6 billion in co-financing by partners, the mainstreaming agenda is one of the largest biodiversity initiatives on record. A whopping 48% of these funds went to the 10 countries that hold most of the world's biodiversity treasure troves – Brazil, India, China, Mexico, South Africa, Colombia, Russian Federation, Indonesia, Vietnam and Argentina.

The obvious reciprocal to bad governance – good governance – certainly holds true, and is demonstrated by the success of mainstreaming projects in post-apartheid South Africa and in that icon of democratic good governance, Costa Rica.^{2,3} These two countries lead the world in innovative approaches to biodiversity conservation, most especially in moving from the traditional 'protected areas' model to an integrated landscape paradigm. The emerging trends and the challenges to the successful implementation of mainstreaming are considered here.

What is 'biodiversity mainstreaming'?

Emerging as an effective and synergistic interface between conservation science and sustainable development, biodiversity mainstreaming has been variously defined over the past decade,^{4,5} most recently at the Cape Town workshop, at which conservation practitioners and researchers from around the globe defined it thus:

Biodiversity mainstreaming is the process of embedding biodiversity considerations into policies, strategies and practices of key public and private actors that impact or rely on biodiversity, so that it is conserved and sustainably and equitably used both locally and globally.

The mainstreaming approach has gained traction across major international organisations, as reflected in the strategic plans and programmes of the Convention on Biological Diversity – the United Nations Environment Programme, United Nations Development Programme and the World Bank – and, most recently, the G20's post-2015 sustainable development agenda.^{6,7} Mainstreaming offers dual benefits to conserving biodiversity and to the livelihoods of people within production landscapes and seascapes – an outcome that has been difficult to achieve where traditional protected area approaches to conservation have failed to effectively embrace the interests of local peoples.⁸⁻¹¹

What does the biodiversity mainstreaming record show?

Firstly, the interdependence of healthy environments and human societies has long been recognised – mainstreaming is not a new concept. In the winter of 1339, Ambrogio Lorenzetti completed a massive series of six frescoes – the Allegory of Good and Bad Government – commissioned not by the Church but by the City Council of Siena, Tuscany's picture-perfect hill city.¹² This purely secular, early renaissance masterpiece presents detailed panoramas of landscapes and cityscapes. It is the two works contrasting the effects of good and bad governance on life in the countryside that are of interest. Rolling hills, clothed by well-tended fields, woods and bountiful crops, a falconer riding off to hunt, and farmers approaching the city carrying abundant produce, presents the story of the countryside under good governance – where justice, equity, wisdom and peace prevail. In contrast, the countryside under bad governance is characterised by eroded fields, mutilated trees, burning hills, abandoned houses and roaming bands of armed bandits.

Nearly seven centuries on, the wisdom portrayed by Lorenzetti resonates with a key lesson learned at the Cape Town workshop – good governance is paramount for healthy environments and for healthy people. From medieval rules of engagement with the environment to modern international conventions, national law reforms and municipal legislation, respect for the law and its fair enforcement has been fundamental. Sound, democratically developed policy and planning are key elements. Since 1994, South Africa has seen impressive advances in environmental legislation¹³ and in conservation planning¹⁴, the pre-requisites for effective mainstreaming. That implementation has not been as energetic as planning, and that governance is slipping in several provinces, is a reality.¹⁵

Secondly, biophysical and socio-economic knowledge – whether traditional or modern – are also essential building blocks for mainstreaming. Again, South Africa has a robust record in using geospatial information for systematic conservation planning. The surge of science-based systematic conservation planning exercises implemented at national and regional scales during the past two decades has provided a convincing base for rational land-use planning.^{16,17} Simultaneously identifying global and local sites of highest biodiversity concern, the new spatial planning tools have guided the targeting of environmentally sensitive and effective investments across landscapes. Without detailed spatial information, the trade-offs between production (agriculture, forestry, fisheries and extractive industries) and the protection, reduction of loss and restoration of biodiversity assets cannot be measured or negotiated.¹⁸

Thirdly, mainstreaming has focused on improving production practices across landscapes and seascapes without compromising biodiversity assets. However, supply and demand sides of trade are often geographically remote, and commodity users are often ignorant of cause and effect. It has been reported that as few as 500 companies control

70% of global trade.¹⁹ Models of trade and threat trends demonstrate that developed nations drive biodiversity threats in developing nations. International trade has been causally linked to 30% of the vertebrate species listed by the International Union for Conservation of Nature as 'threatened'.²⁰ A widely tested response has been to engage the commodity sector in certification schemes for environmentally friendly coffee, cacao, timber, fish, beef, palm oil, etc. These schemes are well known in the consumer countries of the developed 'North', but have they been effective in reducing forest loss in the developing 'South'? The evidence is inconsistent^{21,22} – but, it is a work in progress and should not be too hastily rejected.

The final leg of mainstreaming relates to financing mechanisms. Should biodiversity pay its way – and if so, how? While the entry points for mainstreaming interventions such as policy, planning and production systems have had measurable indicators (such as simple counts of laws enacted and implemented, hectares of land designated for production or conservation and commodities certified) and have enjoyed wide success, financial mechanisms such as the inclusion of natural capital values in national accounting frameworks, reforms in financial flows and payments for environmental services, have been criticised as more hype than hope.²⁴⁻²⁷ But, increasingly, financial institutions are embedding environmental risks in financial models, and recognising the parallels between the systemic risks of the financial sector and the systemic risks associated with ecosystems.²⁸⁻³⁰

What are the challenges to mainstreaming biodiversity?

Despite the enthusiasm and tangible support from donors that biodiversity mainstreaming has enjoyed, it is not without its naysayers. Principal among these are those who question the evidence base of results reported on key mainstreaming interventions such as certification and payments for environmental services.³¹⁻³² While there is a rapidly growing literature on spatial conservation planning and payments for environmental services, the massive investment in mainstreaming projects is not reflected in the peer-reviewed literature. Globally, mainstreaming remains on the periphery of scientific debate – because of both a lack of papers in mainstream journals (but South Africa is addressing this gap) and the absence of any unifying theory of change.

Firstly, let us consider the absence of published results. Few mainstreaming projects, designed as they are around the elaborate 'log-frames' so cherished by donors, offer the opportunity to develop and test hypotheses. Mainstreaming is a messy process.³³ It is at the soft edge of science, with diffuse methodologies that are not only highly context-dependent, but also rely on the personalities and negotiating skills of their leaders. They are high-risk initiatives, with high transaction costs and long-term investment horizons to achieve success. They are essentially both transdisciplinary and transformational, demanding a skills mix that extends well beyond the typical attributes of most researchers in the biodiversity arena.

Experimental or quasi-experimental project designs that include social as well as biophysical measures and outcomes are seldom found in mainstreaming projects. Lorenzetti's frescoes give a hint of possible approaches. South Africa, with its wide range of municipal governance capacities, offers an opportunity to use counterfactual approaches. The impact of good governance ('treatment' – i.e. mainstreaming intervention) versus poor governance ('control' – no mainstreaming intervention) could be monitored with simple biodiversity indicators. Obviously, more sophisticated counterfactual designs can be developed.

In implementing mainstreaming approaches, a critical issue is identifying mainstreaming entry points. A tension exists between project targets that require site-level interventions ('short hook') and the systemic changes required at policy and institutional level ('long hook') to achieve desired outcomes. A focus on ambitious site-level targets can lead projects away from the deeper institutional mainstreaming outcomes, and vice versa. The many successes that were reported on at the Cape Town workshop include 'long hook/upstream' interventions – policy, legislation, institutional development, planning at national levels – that

seldom result in peer-reviewed papers, but have significant impact. The 'short hook/downstream' activities – locally based stewardship programmes, changes in production practices, certification in tourism and in selected food products – also fail to result in journal papers – they simply were not designed to do so.

Project outputs include a wide range of 'soft' products – most important of which are a slow, progressive, positive growth in individual and institutional capacities and behaviour (the means) – and in reaching tangible, 'hard', physically measurable outcomes such as hectares of habitat conserved or restored, stream flows maintained or stabilised, populations of threatened species increased, soil loss reduced, crop yields improved and local communities benefitted (the ends). Achieving desired ends through such transformational means requires decades, not the average 5-year project funding cycle.

Recommendations to the key funding agencies on experimental or quasi-experimental project design have not attracted much response. The operational complexity of biodiversity mainstreaming projects, usually undertaken in resource-poor countries with limited institutional capacity, makes sophisticated and costly project designs difficult to implement and to sustain. Further, the monitoring and evaluation systems of donor agencies are very coarse-grained, focusing on activities, products and compliance with administrative and financial management norms, but with few measures of biodiversity and social outcomes. The mandatory mid-term and terminal evaluations that donors require are invariably undertaken by project management consultants and seldom, if ever, lead to publications outside the grey literature. Early successes enjoy high-profile media coverage, but failed projects are seldom, if ever, reported.

A consequence of the dependency of large, complex mainstreaming projects on donor support, mostly from the three main (but discretely competing) implementing agencies of the GEF – United Nations Environment Programme, United Nations Development Programme and the World Bank – is the lack of an institutional home for the growing community of practice that has evolved during the past decade. Being at the interface between conservation science and sustainable development, mainstreaming practitioners come from a diverse and diffuse mix of backgrounds and institutional loyalties. Mainstreaming lacks the focus of professional societies and organisations such as the Society for Conservation Biology, the International Union for Conservation of Nature or the newly established Intergovernmental Platform for Biodiversity and Ecosystem Services. It needs a general theory of change – or at least a series of theories of change for each intervention type – to bring focus and inspiration to its intellectual content.

A further challenge to bringing focus to its collective strategy is that most of its technical and administrative leadership has come from the geopolitical developed North, while its field activities are in the developing countries of the South. Resource constraints have often resulted in leadership by expatriate consultants, researchers and agency officials – a situation not conducive to building long-term national or regional networks. In addition, the opportunities to build regional learning organisations have not been taken up. But there are hopeful exceptions to this over-simplification.

Across Latin America – from Mexico and Costa Rica, through Colombia, Ecuador and Brazil to Argentina – a strong body of nationally driven mainstreaming programmes has emerged. Penetrating far beyond initial projects such as the Meso-American Biological Corridor project, and the early, difficult initiatives in payments for ecosystem services and shade coffee certification, there is now an inspiring sweep of successful projects that have their roots in these early initiatives – even if they were not originally identified as mainstreaming projects. Conservation is gaining momentum across sectors, supported by new legislation, improved and detailed land-use planning, environmentally responsible production practices and impacts on the ground. The Cape Town workshop report describes many of these.¹ While the naysayers might be correct in criticising the weak evidence base of specific projects, the on-the-ground outcomes, such as the reduction of the rates of forest loss in Costa Rica, the investments in catchment protection in Ecuador and the revision of forest law in Brazil, reflect conceptual advances

beyond traditional protected area approaches. The new paradigm of mainstreaming biodiversity conservation across landscapes and seascapes has become integral to conservation thinking during the past two decades. As a workshop participant concluded: 'If last century was the century of protected areas, the 21st century must become the century of mainstreaming.'

In Africa, mainstreaming has not enjoyed as much traction as in Latin America. This situation can be ascribed to the lack of the enabling preconditions for the approach. Mainstreaming needs both prerequisites (good governance and strong institutions) and stimuli (such as political change).^{34,35} Protected area establishment and expansion remains the core strategy for biodiversity conservation in Africa. But an exception to this rule is found in South Africa. Here, the transition from pariah state to rainbow nation introduced a massive law reform process which, building on the outcomes of the Rio Earth Summit, crafted new water, land-use and environmental legislation and institutions, building on frameworks such as the Convention on Biological Diversity. Today, 20 years after the dawn of the country's democracy, South Africa has one of the most robust mainstreaming programmes anywhere.

Across the world, stimuli for 'hot moments' in conservation³⁶ come in diverse forms. In Eastern Europe, the preconditions set by the European Union for joining the Union by countries with weak environmental policies triggered the introduction of new national legislation and investment in mainstreaming programmes. In Belarus, health problems resulting from massive air pollution from peat fires led to changes in wetland drainage developments and supporting legislation.³⁷ In Indonesia, region-wide air pollution from forest clearing for palm oil provoked international sanction and the subsequent investment in an international Round Table on Palm Oil to promote better land management in the industry.

South Africa and Costa Rica have provided significant leadership in the new paradigm. What accounts for two countries with such different histories, different economies and different societies achieving parallel success in mainstreaming? One must revisit mainstreaming's first principles to explain.

Firstly, democratic and transparent governance systems provide security and longevity to mainstreaming investments. Secondly, South Africa and Costa Rica have high levels of biological diversity, under high levels of threat (from deforestation and other forms of land transformation, impacts of invasive alien species, over-exploitation of threatened species, etc.) – which results in high interest and support from donors. Thirdly, both have a long history of biological research. In the case of Costa Rica, institutions such as the Organisation for Tropical Studies at La Selva and research conducted across the country by the Instituto Nacional de Biodiversidade provide a deep resource of science-based knowledge to underpin legislation and action. In South Africa, the suite of biome projects initiated in the 1970s in response to the International Biological Programme and other programmes of the International Council of Scientific Unions, addressing 'environmental problems that lend themselves to solution through multi-disciplinary, cooperative research' established a long tradition of basic and applied ecological research integrating science and society, challenging many policies of the existing regime.^{38,39} In 1994, the powerful stimulus of the change to democratic governance propelled the programmes forward with major projects – such as Cape Action for People and the Environment, Succulent Karoo Ecosystem Project, the Sub-Tropical Thicket Biome Project, the Grasslands Biome Programme and the massive Working for Water Programme^{40,41} – building on the strong professional community of practice developed over the preceding decades. Finally, both Costa Rica and South Africa have benefitted from the energies of national champions, in both their scientific communities and in politics – with the active personal leadership of their Ministers of Environment (Valli Moosa in South Africa and Carlos Rodriguez in Costa Rica) and of Water Affairs (Kader Asmal in South Africa) dedicated to embedding biodiversity concerns across government policy.

Turning finally to the lack of a unifying, general theory of change. An adequate collective knowledge base is now available on which to develop an overarching theory of change for biodiversity mainstreaming, building

on the operational models of mainstreaming projects from across the globe. A general theory of change is needed that can effectively link hypotheses formulated around specific interventions from different entry points to desired outcomes, and to develop common indicators and measurement approaches to provide evidence to test these hypotheses. Individual projects thus become learning opportunities with exchanges at both vertical and horizontal scales. The need for a robust evidence base is clear. In South Africa, the municipality-level opportunity suggested above is available through the statistics on governance and social indicators provided by the national census, and on biodiversity indicators assembled within the many surveys included in the South African National Biodiversity Institute information system. An even bigger experiential learning opportunity lies in the GEF's information system on the 327 projects it has supported since the first GEF workshop on the topic, convened in Cape Town in 2004.³⁵ A thorough meta-analysis and synthesis of the GEF experience has yet to be undertaken. But the conceptual development and testing of a theory of change for mainstreaming requires the involvement of both the scientific and development communities and stretches beyond mainstreaming implementers. The next big challenge is to translate the 14th-century insights of Ambrogio Lorenzetti into an operational model for the 21st century.

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